



## ORIGINAL ARTICLE

### Professional training and its contribution in dealing with COVID-19

La superación profesional y su contribución en el enfrentamiento a la COVID-19

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#### ABSTRACT

**Introduction:** SAR-CoV2 belongs to the Coronavirus genus and is transmitted by respiratory route. In Cuba, professional training is a key component of the healthcare system to ensure the quality and relevance of its actions; with an imperative need to prepare all medical personnel to face this health emergency.

**Objective:** to assess the impact of professional training and its contribution in facing COVID-19 at Leon Cuervo Rubio Clinical-Surgical Teaching Hospital in the year 2020.

**Methods:** an observational, descriptive and cross-sectional study was carried out from March to September 2020 at Leon Cuervo Rubio Clinical-Surgical Teaching Hospital, in Pinar del Rio; where the target group coincided with the sample of 667 workers being trained to face COVID-19 in the province, where it was necessary to train the teaching staff, and starting from the diagnosis of their potentials a training course was developed.

**Results:** the training course was continuous and staggered, intended for professional personnel, in correspondence with the periodic updating of knowledge and learning needs. It was observed that there were no deaths in spite of having severe patients and only 0,15 % of the professionals who worked with these patients became infected.

**Conclusions:** it was proved that most of the professionals after the training course have a sufficient level of knowledge in relation to COVID-19, which allowed during the first two waves of the disease a work of excellence, achieved with the training course.

**Keywords:** Coronavirus; Covid-19; Advanced Professional; Health Emergency.

## RESUMEN

**Introducción:** el SAR-CoV2 pertenece al género Coronavirus y se transmite por vía respiratoria. En Cuba se comienza la superación profesional como un componente clave del sistema de salud para poder asegurar la calidad y pertinencia de sus acciones; con una necesidad imperiosa de preparar a todo el personal médico en función de enfrentar esta emergencia sanitaria.

**Objetivo:** evaluar la repercusión de la superación profesional y su contribución en el enfrentamiento a la COVID-19.

**Métodos:** se realizó un estudio observacional, descriptivo y transversal en el mes de marzo a septiembre del 2020 en el Hospital Clínico Quirúrgico Docente "León Cuervo Rubio", de Pinar del Río; donde el universo coincidió con la muestra de los 667 trabajadores que enfrentarían la COVID-19 en la provincia, donde fue necesaria la preparación del claustro de profesores, partiendo del diagnóstico de sus potencialidades y se desarrolló un curso de superación.

**Resultados:** la superación fue continua y escalonada, dirigida a personal profesional, en correspondencia con la actualización periódica del conocimiento y las necesidades de aprendizaje. Donde se apreció que no hubo fallecidos a pesar de presentar pacientes graves y solo el 0,15 % de los profesionales que trabajaron con estos pacientes se infestó.

**Conclusiones:** se comprobó que la mayoría de los profesionales después de la superación poseen un nivel suficiente de conocimientos sobre la COVID-19, logrado con el curso de superación, lo que permitió durante las dos primeras oleadas de la enfermedad un trabajo de excelencia.

**Palabras Claves:** Coronavirus; Covid-19; Superación Profesional; Emergencia Sanitaria.

## INTRODUCTION

On December 31<sup>st</sup>, 2019, authorities in Wuhan City in Hubei Province, China, reported a cluster of 27 cases of acute respiratory syndrome of unknown etiology among people associated with a seafood market, of which 7 were reported as severe. The clinical picture of the cases presented with fever, some patients had dyspnea and pneumonic changes in the thorax X-rays (infiltrative lesions of the bilateral lung).<sup>(1)</sup>

In Cuba, professional training is a key component of the healthcare system in order to ensure the quality and relevance of its actions; with a vital need to prepare all medical personnel to face this health emergency.

Like others of the coronavirus family, this virus causes a variety of clinical manifestations encompassed under the term COVID-19, which include respiratory symptoms ranging from the common cold to severe pneumonia with respiratory distress syndrome, septic shock and multiple organ failure. The majority of COVID-19 cases reported to date have mild onset.<sup>(2,3,4)</sup>

It is transmitted by respiratory droplets; this being the main mode of direct contact transmission; while indirect contact transmission: the virus can be transmitted through indirect contact with an infected person. Droplets containing the virus are deposited on the surface of the object, which may be touched by the hand. The virus from the contaminated hand can pass into the mucosa (or mucous membranes) of the person's oral cavity, nose and eyes and cause infection. The new live coronavirus has been detected in stool from confirmed patients, suggesting the possibility of fecal-oral transmission. Mother-to-child transmission: one child of the mother with Covid-19 was confirmed to have positive throat swabs after 30 hours after birth. Incubation period: 1 to 14 days. Transmissibility period: up to 14 days after disappearance of symptoms. Calculated lethality is approximately 2 to 4 %, although this figure may vary.

The main clinical forms recognized by the World Health Organization are the following: Uncomplicated disease (minimally symptomatic, uncomplicated lower respiratory tract infection (mild pneumonia), severe pneumonia; acute respiratory distress syndrome (ARDS), Sepsis or septic shock.

The virus affects more severely people in advanced ages, patients with immunosuppression and chronic diseases such as: Diabetes Mellitus, Ischemic Heart Disease, Cancer and Chronic Lung Disease. Among the most frequent complications are: Acute Respiratory Distress Syndrome and Cytochemical Storm Syndrome. Respiratory complications usually occur from the 7<sup>th</sup> day of the onset of symptoms.<sup>(4)</sup>

With the onset in Cuba of the first confirmed positive cases, on March 11<sup>th</sup>, 2020, the Ministry of Public Health of Cuba, established "*public health emergency*" to the national territory by means of the ministerial resolution 82/20 March 23<sup>rd</sup> 2020.

Professional training is essential in the face of any health emergency. Since COVID-19 is a totally new disease, there is an imperative need to prepare all medical personnel to face this health emergency.<sup>(5)</sup>

Several authors,<sup>(6,7)</sup> in their literature propose the definition of professional training. However, in this research we refer to the one proposed by Salas Perea, Weissmann K,<sup>(8,9)</sup> which defines it as a set of educational processes that enable university graduates to acquire and continuously improve knowledge and skills required for a better performance of their work responsibilities and functions. It is a key component of healthcare systems in order to ensure the quality and relevance of their actions.

The Regulations of Postgraduate Education of the Republic of Cuba according to Resolution No. 140/2019 in its Chapter IV, Article 19 refers that the professional training aims to contribute to the continuing education and systematic updating of university graduates, the development of the performance of their professional and academic activities, as well as the enrichment of their cultural heritage.<sup>(10)</sup>

The main organizational forms of professional training or continuing education are: courses, training and diploma courses. Other secondary forms are: seminar; workshop; specialized conference; scientific debate; self-preparation; consultation; and others. All forms complement and make possible the study and dissemination of advances in knowledge, science and technology.

Continuing education consists of four fundamental steps: identification of learning needs, educational process, monitoring and evaluation.<sup>(11)</sup>

Currently, and globally, all medical scientific societies, professional associations, universities, healthcare institutions and government agencies have concentrated efforts - joint and in sectors - to face COVID-19 pandemic. Task forces have been generated for the elaboration of protocols and recommendations, aimed at both the general population and healthcare professionals. There is an enormous flow of scientific and also pseudoscientific or speculative information, which affects the perception of the general population about the effectiveness of institutions to implement policies for prevention and medical management of infected patients; as well as the heterogeneous information in terms of its scientific quality affects physicians and collaborators to make decisions that affect patients and themselves.<sup>(12)</sup>

The objective of the present work is to evaluate the impact of professional training and its contribution in facing up COVID-19 at Leon Cuervo Rubio Provincial Clinical Surgical Teaching Hospital in Pinar del Rio, from March to September 2020.

## METHODS

An observational, descriptive and cross-sectional study was carried out at Leon Cuervo Rubio Provincial Clinical Surgical Teaching Hospital, in Pinar del Rio; in order to comply with the Plan in Cuba to Face-up COVID-19; during March to September 2020. The target group coincided with the sample of 667 professionals who worked with these patients in the institution.

The specific objective of this training design was to train professionals, workers in the healthcare sector, to minimize the risk of introduction and dissemination of the New Coronavirus (COVID-19) in the territory and minimize the negative effects of an epidemic on the health of the population and its impact on the economic-social sphere of the country. For the adequate performance, it was necessary to prepare the teaching staff based on the diagnosis of their potentials, workshops were developed; specialized conference; scientific debate and self-preparation. Professors were chosen to carry out interactive dialogue to help identify needs for development and training.

This training was always continuous and in correspondence with the periodic updating of knowledge and learning needs.

This course was structured in three modules: Module-I covered the measures for the plan to face-up COVID-19 in the institution; Module- II worked on the update on this nosological entity and Module-III dealt with the reasoned therapeutics for this disease.

**Table 1** Agenda of COVID-19 training course at Leon Cuervo Rubio Provincial Clinical Surgical Hospital, 2020.

Theme	Content	Time
<b>Module I</b>	<b>Plan to face-up COVID-19</b>	45 minutes
Theme 1	Measures of biosecurity to avoid the contagion while working with COVID-19 patient. Means of individual and collective protection.	45 minutes
<b>Module II</b>	<b>Update on COVID-19 management</b>	<b>1 hour and 30 minutes</b>
Theme 2	Classification of the patient. Minor, moderate severe and critical.	45 minutes
Theme 3	Criteria for admission: age, history of chronic diseases, altered biomarkers and presence of COVID-19 by certified diagnostic means.	45 minutes
<b>Module III</b>	<b>Therapeutic for COVID-19 according to the National Protocol</b>	<b>2 hours</b>
Theme 4	Reception, general and specific measures	45 minutes
Theme 5	Management of the minor and moderate forms according to the national protocol of actions.	45 minutes
Theme 6	Application of pharmacokinetics, pharmacodynamics, criteria for indication, adverse reactions, presentation and dosage of interferon.	30 minutes

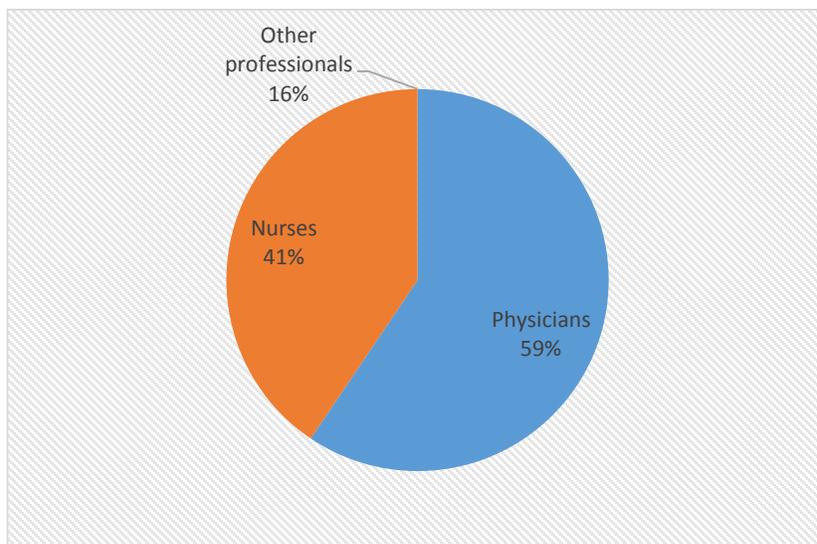
A questionnaire was applied to the hospital professionals to assess their level of knowledge related to COVID-19 before and after the professional training was applied. The results were evaluated as sufficient (more than 70 % of the questions in the questionnaire with correct answers) and insufficient (less than 70 % of the questions in the questionnaire with correct answers).

In addition, the repercussion of this training was evaluated in the medical practice with COVID-19 patients, in the first two outbreaks of the pandemic in the province, where 104 patients were attended, where by means of observation variables such as: complications, deaths and workers infested during the work were evaluated.

The principles of medical ethics and the aspects established in the Declaration of Helsinki were met.

## RESULTS

A total of 667 professionals were trained in the hospital. Fifty percent were physicians, 34 % were nurses and 16 % were other healthcare professionals. (Fig. 1)



**Fig. 1** Professionals trained on COVID-19 at Leon Cuervo Rubio Provincial Clinical Surgical Hospital.2020

It was found that once the training based on the medical protocols of actions established by the Ministry of Public Health was completed, 100 % of the professionals in the institution had a sufficient level of knowledge concerning COVID-19 (Table 2).

**Table 2.** Level of knowledge of healthcare professionals in relation to COVID-19.

Professionals	Before the intervention				After the intervention			
	Sufficient		Insufficient		Sufficient		Insufficient	
	No	%	No	%	No	%	No	%
Physicians	53	15,73	284	84,27	337	100	0	0
Nurses	36	16,36	184	83,64	220	100	0	0
Other professionals	14	12,73	96	87,27	110	100	0	0

Sources: Interview

Of all the professionals who worked with confirmed and suspected cases of COVID-19 in this institution, only one nurse (0,15 %) was infected.

During the time evaluated, no transmission events had to be lamented in this COVID-19 care center, in the westernmost of Cuba provinces.

## DISCUSSION

Yordi García MJ et al.,<sup>(13)</sup> reported that Cuba guarantees its population free complete healthcare coverage and ensures that research and scientific innovations correspond to social objectives.

Therefore, a health policy is sustained in coordination with other sectors of the economy and the political system of the country that allows, in a situation such as facing-up COVID-19, to make up for some resource shortages and, most importantly, to put research centers and all the qualified personnel in function of the socio-epidemiological emergency.

In such circumstances, the value of a scientific policy addressed to social objectives is evidenced, which weighs decision making and concludes in his research that the experiences of the current epidemiological emergency demand that the societies of the present century adapt their research agendas to respond to the contingencies of their communities, including those of health.

Other authors refer that due to the conditions of social distancing as an effective preventive measure against COVID-19, it has been possible in a virtual way to carry out activities of scientific character, in this way the professionals have achieved the socialization of the aspects related to this disease from the analysis of the published articles, medical literature related to the same, aspects that contribute to the increase of the scientific level in function of the improvement in the quality of the services rendered to the population. This has been made clear by specialists in intensive medicine, internal medicine, pneumology, ophthalmology, clinical anatomy, dermatology, microbiology, geriatrics, natural and traditional medicine and pharmacology. They also mention that there is also ongoing training for physicians and nurses on intensive care by the most experienced professionals in the services, as well as the updating of pediatricians, neonatologists, obstetricians-gynecologists and endocrinologists.<sup>(14)</sup>

The literature reports that educators have had a challenge during COVID-19 epidemic in the education of healthcare professionals to face-up the epidemic, which will be even greater in the future due to the need to achieve sustainability of education and the revision of training programs to face the new epidemiological reality.<sup>(15)</sup>

This preparation at the same time makes it possible that in the hospital those COVID-19 patients who presented in the first two epidemiological outbreaks in the province, 2,88 % (3 patients) presented complications related to this disease, without reporting deaths; all as a result of the training of healthcare personnel.

It is concluded that most of the professionals after the training course have a sufficient level of knowledge in relation to COVID-19, which allowed during the first two waves of the disease a work of excellence, achieved with the training courses.

### Conflict of interests

Authors declare there is no conflict of interests

### Authorship contribution

**DDR, MSS and JECQ:** worked in the conceptualization, research, methodology, visualization and management of the project. Taught the training course and on the original-draft of the article.

**NHS:** worked in the formal analysis and writing and on the original draft of the article.

**MBCC:** worked on the supervision, writing, and final draft of the article.

All of the authors approved the final manuscript.

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**Additional material:** Additional material to this article can be consulted in its electronic version available at: [www.revcmpinar.sld.cu/index.php/publicaciones/rt/suppFiles/5373](http://www.revcmpinar.sld.cu/index.php/publicaciones/rt/suppFiles/5373)

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